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EXAMINER	
JACKSON, ANDRE K	
ART UNIT	**PAPER NUMBER**
2856	

DATE MAILED: 08/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/944,767	MILONE, CHRISTOPHER J.
	Examiner	Art Unit
	André K. Jackson	2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 February 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of an apparatus for determining the thickness of layers of ground water in Paper No. 6 is acknowledged. The traversal is on the grounds that Applicant argues that independent claim 27 could have had dependent claims added specifying the resistive network; Applicant argues that independent claim 27 could have been drafted without the data processor; Applicant argues that independent claim 28 could have been included as a dependent to claim 27 and that since the field of search for all groups are in the same class and subclass this search should not be a burden upon the Examiner. This is not found persuasive because the Examiner agrees that in hindsight all of the scenarios presented by the Applicant could have been done by the, but it was not done therefore, the restriction is deemed proper. As having all of the groups in the same class and subclass this does not mean that there are not multiple inventions within the subclass. For example, Applicant appears to be arguing that same subclass of classification means same invention. If such were carried to its logical conclusion there could only be one patent per subclass and Applicant could be denied a patent on the basis that there is already at least one patent in Class 73, Subclass 152. The requirement is still deemed proper and is therefore made FINAL.

Drawings

2. New drawings are required in this application because the drawings are difficult to read and understand. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

3. The drawings are objected to because Figure 1a is not shown as stated on page 5, line 26 and reference numbers (1) and (3) appear to be pointing at the same subject. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the tape support means must be shown or the feature canceled from the claims. No new matter should be entered.

   A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:

On page 4, line 12 --it-- should be placed after "that".

On page 5, line 8 "o-ring" should be --O-ring--.

On page 5, lines 27-29 beginning with "When" the sentence is written awkwardly. There seems to be a word omitted or added.

On page 4, line 20 "figure(s)" is spelled with a lower case (f), but on pages 8 and 9 "figure" is spelled with an upper case (f). Consistency is needed.

On page 7, lines 7-9 should (7) represent, a "hydrostatic circuit" or a "hydrostatic resistance network". Consistency is needed.

On page 9, line 3 the parenthesis is not closed --)--.

On page 9, line 33 there are two periods.

Appropriate correction is required.

Claim Objections

6. Claims 16-19 are objected to because of the following informalities:

Regarding claims 16-19, lines 1-2 of the claim it seems as if "is" should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrenfried et al. (4967594) in view of Solinst.

Regarding claim 1, Ehrenfried et al. disclose "Sheathing and venting of resistance-tape level sensor" which has an elongated sensor extending down the length of the well (Figure 1); a conductive liquid sensing circuit having a resistive network for sensing electrically conductive liquids (Column 1); a hydrostatic sensing circuit that responds to the actuation of conductive and non-conductive liquids (Columns 1 and 3) and an electrically conductive liquid measuring means coupled to the network for producing a signal proportional to the thickness of a layer of conductive liquid in the well (Column 3). What is not disclosed by Ehrenfried et al. is an electrically conductive and a non-conductive liquid measuring means coupled to the resistive network for producing an all liquids signal proportional to the thickness of all liquids in the well including both conductive and non-conductive liquids. However, Solinst discloses an "Interface Meter" which has an electrically conductive and a non-conductive liquid measuring means for producing an all liquids signal proportional to the thickness of all liquids in the well including both conductive and non-conductive liquids (Page 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include an electrically conductive

and a non-conductive liquid measuring means for producing an all liquids signal proportional to the thickness of all liquids in the well including both conductive and non-conductive liquids as taught by Solinst. By adding this provision it would make it possible for the user to conduct measurements in a well for both conductive and non-conductive liquids. Ehrenfried et al. disclose one resistive network for both measurements, which makes more compact.

Regarding claim 2, Ehrenfried et al. disclose including DNAPL measuring means coupled to a portion of the resistive network at a well bottom portion for detecting the possible presence of a DNAPL layer adjacent the well bottom portion (Column 1).

Regarding claim 3, Ehrenfried et al. disclose where the DNAPL measuring means for measuring the resistance of the resistive network which is proportional to the thickness of the DNAPL layer adjacent the well bottom portion (3 and column 1). However, Solinst discloses where the DNAPL measuring means for measuring the thickness of the DNAPL layer adjacent the well bottom portion (Page 2).

Regarding claim 4, Ehrenfried et al. disclose a LNAPL measuring means coupled to an upper portion of the resistive network at a well top portion for detecting the possible presence of a LNAPL layer adjacent the top portion (Column 1, Figure 1, 6).

Regarding claim 5, Ehrenfried et al. disclose a LNAPL measuring means (6). Ehrenfried et al. do not disclose where the LNAPL measuring means includes a means for comparing the resistance of the first network with the second network. However, Solinst discloses a means for comparing (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include a means for comparing as taught by Solinst. By adding this provision it would make it possible for the user to determine the thickness of the layers. Ehrenfried et al. disclose resistors and to compare the resistors would be clearly within the purview of the skilled artisan since Solinst shows it is known to compare the values in the article presented also by adding resistor measurements this would make the measurements more accurate.

Regarding claim 6, Ehrenfried et al. disclose a LNAPL measuring means coupled to the upper portion of the resistive network at a well top portion for detecting the possible presence of a LNAPL layer adjacent the well top portion (Column 1, Figure 1, 6).

Regarding claim 7, Ehrenfried et al. disclose a LNAPL measuring means (6). Ehrenfried et al. do not disclose where the LNAPL measuring means includes a means for comparing the resistance of the first network with the second network. However, Solinst discloses a means for comparing (Pages 2 and 3). Therefore, it would have been obvious to one

of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include a means for comparing as taught by Solinst. By adding this provision it would make it possible for the user to determine the thickness of the layers. Ehrenfried et al. has resistors and to compare those resistors would be clearly within the purview of the skilled artisan since Solinst shows it is known to compare the values in the article presented also by adding resistor measurements this would make the measurements more accurate.

Regarding claim 8, Ehrenfried et al. do not disclose where the elongated sensor includes a well depth sensing circuit, including a third resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well depth. However, Solinst discloses where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth as taught by Solinst. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this

measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic sensing and conductive sensing and it would make the measurements more accurate.

Regarding claim 9, Ehrenfried et al. do not disclose where the elongated sensor includes a well depth sensing circuit, including a third resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well depth. However, Solinst discloses where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth as taught by Solinst. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic sensing and conductive sensing and it would make the measurements more accurate.

Regarding claim 10, Ehrenfried et al. do not disclose where the elongated sensor includes a well depth sensing circuit, including a third

resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well depth. However, Solinst discloses where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth as taught by Solinst. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic sensing and conductive sensing and it would make the measurements more accurate.

Regarding claim 11, Ehrenfried et al. do not disclose where the elongated sensor includes a well depth sensing circuit, including a third resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well depth. However, Solinst discloses where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore,

it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth as taught by Solinst. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic sensing and conductive sensing and it would make the measurements more accurate.

Regarding claim 12, Ehrenfried et al. disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures (13).

Regarding claim 13, Ehrenfried et al. disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures (13).

Regarding claim 14, Ehrenfried et al. disclose where the elongated sensor has a tape coupled to tape support means extending along the

length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures (13).

Regarding claim 15, Ehrenfried et al. disclose where the elongated sensor has a tape coupled to tape support means extending along the length of the well for retaining the tape in place within the well between well inspections thereby eliminating lowering sensors into the well that may require subsequent decontamination procedures (13).

Regarding claim 16, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means (Column 7).

Regarding claim 17, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means (Column 7).

Regarding claim 18, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor

from the first network should a conductive liquid contact the conductive liquid sensing means (Column 7).

Regarding claim 19, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the first network should a conductive liquid contact the conductive liquid sensing means (Column 7).

Regarding claim 20,

Regarding claim 21, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes tiny contacts positioned within the tape (Column 7).

Regarding claim 22, Ehrenfried et al. has an elongated sensor extending down the length of the well (Figure 1); a conductive liquid sensing circuit having a resistive network for sensing electrically conductive liquids (Column 1); a hydrostatic sensing circuit that responds to the actuation of conductive and non-conductive liquids (Columns 1 and 3) and electrically conductive liquid measuring means coupled to the network for producing a signal proportional to the thickness of a layer of conductive liquid in the well (Column 3). What is not disclosed by Ehrenfried et al. is an electrically conductive and a non-conductive liquid measuring means coupled to the resistive network for producing an all liquids signal proportional to the thickness of all liquids in the well including

both conductive and non-conductive liquids. However, Solinst discloses an electrically conductive and a non-conductive liquid measuring means for producing an all liquids signal proportional to the thickness of all liquids in the well including both conductive and non-conductive liquids (Page 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include an electrically conductive and a non-conductive liquid measuring means for producing an all liquids signal proportional to the thickness of all liquids in the well including both conductive and non-conductive liquids as taught by Solinst. By adding this provision it would make it possible for the user to conduct measurements in a well for both conductive and non-conductive liquids. Ehrenfried et al. do not disclose where the DNAPL measuring means for measuring the resistance of the resistive network which is proportional to the thickness of the DNAPL layer adjacent the well bottom portion. However, Solinst discloses where the DNAPL measuring means for measuring the thickness of the DNAPL layer adjacent the well bottom portion (Page 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include where the DNAPL measuring means for measuring the thickness of the DNAPL layer adjacent the well bottom portion as taught by Solinst. By adding this feature it would give the operator an indication of the thickness or depth of the liquid. Ehrenfried et

al. disclose a resistive network. Therefore, to incorporate that network with the known ability to detect thickness would be well within the purview of the skilled artisan. Ehrenfried et al. disclose a LNAPL measuring means (6). Ehrenfried et al. do not disclose where the LNAPL measuring means includes a means for comparing the resistance of the first network with the second network. However, Solinst discloses a means for comparing (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include a means for comparing as taught by Solinst. By adding this provision it would make it possible for the user to determine the thickness of the layers. Ehrenfried et al. disclose resistors and to compare the resistors would be clearly within the purview of the skilled artisan since Solinst shows it is known to compare the values in the article presented also by adding resistor measurements this would make the measurements more accurate. Ehrenfried et al. disclose one resistive network for both measurements, which makes more compact.

Regarding claim 23, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes a conductive liquid sensing means coupled to each resistor of the resistive network for effectively removing a resistor from the network should a conductive liquid contact the conductive liquid sensing means (Column 7).

Regarding claim 24, Ehrenfried et al. disclose where the conductive liquid sensing circuit includes tiny contacts positioned within the tape (Column 7).

Regarding claim 25, Ehrenfried et al. do not disclose where the elongated sensor includes a well depth sensing circuit, including a third resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well depth. However, Solinst disclose where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth as taught by Solinst. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic sensing and conductive sensing and it would make the measurements more accurate.

Regarding claim 26, Ehrenfried et al. do not disclose where the elongated sensor includes a well depth sensing circuit, including a third

resistive network of connected resistors and well depth measuring means coupled to the third resistive circuit for producing a signal proportional to well depth. However, Solinst disclose where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth (Pages 2 and 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ehrenfried et al. to include where the elongated sensor includes a well depth sensing circuit, and well depth measuring means for producing a signal proportional to well depth as taught by Solinst. By adding this parameter the user would be able to ascertain the depth of the particular fluid in the well. A third resistive network is not disclosed. However, to use a resistive network for this measurement is clearly within the purview of the skilled artisan since a resistive network is used with hydrostatic sensing and conductive sensing and it would make the measurements more accurate.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to André K. Jackson whose telephone number is (703) 305-1522. The examiner can normally be reached on Mon.-Thurs. 7AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (703) 305-

4705. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

A.J.
August 8, 2003

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